Welfare compensation for unemployment in the Great Recession

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Abstract: This paper analyses the extent to which tax-benefit systems provide an automatic stabilisation of income for those who became unemployed at the onset of the Great Recession. The focus of the analysis is on the compensation for earnings lost due to unemployment which is channelled through the welfare systems to this group of people who are clearly vulnerable to the recession's adverse effects. In order to assess the impact of unemployment on household income, counterfactual scenarios are simulated by using EUROMOD, the EU-wide microsimulation model, integrated with information from the EU-LFS data. This paper provides evidence on the differing degrees of relative and absolute resilience of the household incomes of the new unemployed. These arise from the variations in the protection offered by the national tax-benefit systems and from the personal and household circumstances of those most recently at risk of unemployment in the countries considered.

***Keywords*:** unemployment, European Union, household income, microsimulation.

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1. Introduction

The financial crisis of 2008 has lead to the most serious economic downturn since the Second World War. The European economies shrank by 5.3% between the second quarter of 2008 and the same quarter of 2009. Because of the size of such an economic slowdown, originated in the United States and then propagated to the rest of the world, many refer to this period as the Great Recession (Arpaia and Curci, 2010).

Although the EU unemployment rate increased only to a limited extent (from 6.9% in the second quarter of 2008 to 8.9% in the same quarter of 2009) when compared to the contraction in GDP, the impact of the Great Recession on labour markets has, since then, been intense and its effects seem likely to last longer than the time taken for GDP to recover. Projections suggest that the unemployment rate in the European Union will stay above 10% until the end of 2013, a level considerably higher than the pre-crisis rate (European Commission, 2012). Moreover, the number of long term unemployed, defined as those in unemployment longer than one year, increased by nearly 10% between the second quarter of 2008 and the same quarter of 2009, reaching 6.7 million people. Over the following years the number of long term unemployed has continued to rise, reaching 9 million in the second quarter of 2010 and nearly touching 11 million in the same quarter of 2012. Considering also the large proportion of those who lost their job at the onset of the Great Recession who are still out of the labour market, long term unemployment and its consequences on individual well being will be a challenge for the near future (European Commission, 2010).

The picture described above, as well as the lessons of previous recessions, suggest that the Great Recession will overshadow European economies for years to come, through legacies such as unemployment and public debt (Keeley and Love, 2010), and with long-lasting impacts on household incomes (Jenkins et al., 2013).

The effects of the Great Recession at its onset have varied across EU countries with a decrease in GDP ranging from 3 to 4 percent in Greece, Portugal and France, 4 to 6 percent in Belgium, Netherlands, UK, Germany and Italy and more than 15% in Estonia and other Baltic states. Moreover, there has been a high degree of heterogeneity in the response of labour markets to the negative shocks in GDP (OECD, 2010). Some countries (i.e. the Baltic States, Ireland, and above all Spain) experienced a large increase in unemployment relative to the fall in GDP. For others (i.e. Belgium, Italy, the Netherlands and above all Germany) the opposite has been the case[1]. It is clear that the elasticity of employment to GDP decline is hugely differentiated across countries due to *i)* specific employment policies which mitigated the effects of the crisis on the overall employment (e.g. internal flexibility through short-time working arrangements, temporary partial unemployment and temporary closures) as opposed to the relatively high share of workers in temporary contracts who have been relatively easily dismissed, *ii)* a different timing effect due to the productive structure of the country (with national economies depending to a larger extent on the construction sector affected more

[1] A 1% reduction in real GDP between the second quarter of 2008 and the same quarter of 2009 is associated with an increase in the unemployment rate of about 11% in Estonia (0.57 ppt), 16% in Spain (1.70 ppt) and 23% in Ireland (1.26 ppt). The same indicator amounts to about 4% in Belgium (0.26 ppt) and Netherlands (0.11 ppt), to just above 1.5% in Italy (0.11ppt) while no discernible variation has been reported in the German unemployment rate between the second quarters of 2008 and 2009 despite a real GDP reduction of 6.2%. For France and Portugal the indicator is close to 7% (respectively 0.49 and 0.54 ppt), while for the UK it is just below 8.5% (0.44 ppt).

immediately) and *iii)* other symptoms of the recession such as a decline in overall labour productivity, a reduction in earnings or increased rates of early retirement (European Commission, 2010).

Nevertheless, unemployment is one of the most important consequences of the Great Recession (Keeley and Love, 2010), at least in terms of direct impact on the economic well-being of individuals who lose their jobs, as well as that of their families. In addition to reducing income levels, unemployment increases citizen's economic insecurity, which Osberg (1998) defines as the anxiety produced by the lack of economic safety. Such an increase in economic insecurity is of great concern given its immediate and long-term effects not only for those individuals experiencing unemployment but also for employed individuals, who would change their current behaviour due to the increase in the likelihood of a future job loss.

Welfare states, however, prevent or insure against economic insecurity, so the aim of this paper is to understand, in a cross-country perspective, the extent to which tax-benefit systems provide an automatic income stabilisation for those who became unemployed at the onset of the Great Recession. In particular, we aim to measure the amount of income insurance that individuals and their households receive from the Welfare State against the hazard of the Great Recession. In doing so we restrict our attention to one of the primary channels of propagation of adverse effects of recession onto the living standards of the most vulnerable: the loss of a job. We refrain from considering other aspects such as a reduction in hours worked for those with a job or a contraction in the hourly wage for those with flexible contracts. The consequences of the crisis on the most vulnerable individuals depend on their individual characteristics and the interaction between their labour market participation, their living arrangements and the capacity of the tax and benefit systems to absorb macro-economic shocks.

Dolls et al. (2012) show that the automatic stabilizers differ greatly across countries in particular in the case of asymmetric unemployment shocks, assuming that those already in unemployment at the time of the survey data collection (who may have already exhausted their Unemployment Benefits) can be representative of the individuals who lose their job at the onset of the Great Recession. For the first time in a comparable cross-country perspective, we characterise in a more precise way those who became unemployed at the onset of the Great Recession (Jenkins et al., 2013) and analyse the effectiveness of the tax-benefit systems in cushioning the income loss in the short and long term.

Lack of longitudinal up-to-date information on household income and labour market circumstances, usually available only few years after the beginning of the unemployment spell and in a restricted number of countries, constrains the possibilities for empirical analysis. To address this limitation, we assess the impact of the unemployment on household income by means of simulating counterfactual scenarios by using a fiscal microsimulation approach (Bourguignon and Spadaro, 2006) which allows us to estimate the household incomes of individuals who lose their job, considering the direct cushioning effect of the tax-benefit systems and the way they depend on the remaining household market income and personal/household characteristics. The use of tax-benefit microsimulation models to consider how the welfare systems protect people from an extreme shock has become known as "stress test" of the tax-benefit system (Atkinson, 2009) and increasingly applied to analyse the consequences of the Great Recession (Figari et al., 2011, Jenkins et al., 2013).

We highlight the main motivations to exploit such an approach in section 2. In section 3 we introduce EUROMOD, the EU-wide tax-benefit model, used in the analysis to derive disposable income in the counterfactual scenarios. Moreover, we present the statistical

matching procedure used to identify those who became unemployed using information from the EU Labour Force Survey, which covers the transitions to unemployment between 2008 and 2009. Finally, we describe the indicators we apply to capture the resilience of the welfare system in both relative and absolute terms.

The paper focuses on a set of six countries of the European Union which allow us to consider a large variety of circumstances: Belgium, Estonia, Spain, Italy, the Netherlands, and the UK. These countries experienced different macroeconomic changes during the first phase of Great Recession, with large unemployment increases in Estonia, Spain and the UK (the latter two countries accounting for most of the increase in unemployment at EU level between 2008 and 2009) and relatively moderate increases in Belgium, Italy and the Netherlands. Moreover, these countries have different unemployment protection schemes (and, generally, welfare systems), ranging from a flat scheme in the UK to generous earnings related schemes in Belgium, Spain, and the Netherlands. The most relevant features of the unemployment protection systems of the countries included in the analysis are described in section 4.

Cross country evidence of the different aspects of the automatic income stabilisation offered by the tax-benefit systems is presented in section 5, showing the differing degrees to which unemployment has the potential to reduce household incomes, and the extent of resilience of those incomes due to the protection offered by the tax-benefit systems, the household situation of the unemployed person, and across countries. Section 6 concludes, summarising the main findings and suggesting some research developments for the future.

2. "Stress testing" the tax-benefit systems: motivations and approach

Why do we need to stress test the tax-benefit systems? And what do we mean exactly by a stress test?

In a period of economic downturn, with direct consequences for the labour market participation of individuals, coupled with necessary fiscal consolidation in most European countries, it is necessary to understand how contemporary tax-benefit systems react to changes in individual circumstances. And, more importantly, it is necessary to assess the extent to which household incomes are protected by the tax-benefit systems.

The stress test approach is common in financial institutions to test the sensitivity of a portfolio to a set of extreme but plausible shocks and to assess the significance of the system's vulnerabilities (Jones et al., 2004). Atkinson (2009) has suggested extending the same approach to tax-benefit systems in order to predict the cushioning effects of the social protection schemes in the event of a loss of market incomes and to assess the overall income stabilisation after a macroeconomic shock.

By using a fiscal microsimulation approach which combines detailed survey data on market incomes and household characteristics and tax-benefit rules (Bourguignon and Spadaro, 2006), we can determine the different components of household disposable income under different counterfactual scenarios in which, as a consequence of a macro-economic shock, we assume that a given number of individuals lose their job. Microsimulation models are valuable tools to determine the distributional effects of changing household characteristics and labour market participation. A more systematic use in disentangling the consequences of the Great Recession is particularly appropriate (Jenkins et al., 2013).

The simulated household disposable income of the individuals depends on the cushioning effect of contributory and means-tested benefits for the unemployed (if entitled), the effects of other means-tested benefits and tax credits designed to protect families on low income, and

on other household incomes, in the form of earnings of those still in work as well as pensions and benefits, received by other household members. The outcomes depend on whether the unemployed person is entitled to Unemployment Benefit or not, and will vary in the short term and in the longer term when entitlement to Unemployment Benefit is typically exhausted. In order to assess the robustness of our measures of the resilience of the welfare systems we consider different scenarios in these respects.

By using a tax-benefit model which is based on micro data representative of the national population, the stress test exercise uses as a benchmark the real income distribution observed at a given time. Moreover, the pattern of income changes depends on the presence of other incomes, the household characteristics, and the interaction between the different tax-benefits instruments. In doing so our work enriches the perspective offered by model family calculations (OECD, 2007, 2011b), by characterizing in an informed and detailed way who became unemployed, considering their household circumstances and their position in the income distribution.

A stress test exercise can provide evidence of the effects of either a hypothetical macro-economic shock or a contemporary shock for which survey data covering the period of interest are not yet available. The latter option is the one we follow to assess the variation in social impact of an increase in unemployment during the Great Recession across countries and social protection systems. In due course, survey data collected over the period of the Great Recession will provide evidence of the evolution of the income distribution and analysis of longitudinal data will show us how incomes changed for those directly affected due to unemployment (Jenkins et al., 2013). However it is important to assess the social impact of specific aspects of the crisis and to inform the policy debate in a timely fashion (OECD, 2011a). Although the EU economy has started to recover there are risks of recession returning, the labour market has not yet recovered (European Commission, 2010) and it is necessary to monitor the social impact of the current situation.

Moreover, the stress test approach allows us to focus on a specific aspect of a macroeconomic shock, highlighting the direct compensation provided by tax-benefit systems rather than that arising from other adaptive changes in individual behaviours. In this paper we focus exclusively on the increase in unemployment as one of the channels through which the Great Recession affects directly individuals' well-being. As stressed by Jenkins et al. (2013) the short term consequences of the Great Recession on the inequality of the income distribution might be negligible, and there could be differential and potentially offsetting effects for different groups in the population. The social indicators usually used, such as the indicator of relative poverty, might have serious difficulties in capturing these effects on social exclusion (Nolan, 2009). The overall effect of the Great Recession on the income distribution is likely to be affected by general equilibrium consequences and other behavioural responses. Previous recessions suggest that the evolution in the overall income distribution can hide the changes in income of particular groups at risk who suffered the direct consequences of the crisis (Aaberge et al., 2000). However, individuals and households directly affected by unemployment suffer to a large extent and it is important to assess the extent to which the welfare system helps to stabilise their income and whether there are specific weaknesses in the policy instruments in operation.

Even if current income falls for only the individuals affected by an unemployment shock, economic insecurity, which depends on current wealth, past experience and future expected outcomes (Bossert and D'Ambrosio, 2009), increases for all households. Whenever the unemployment rate increases and the government fails to provide a sufficient level of unemployment insurance, employed individuals have higher expectations of a job loss and of

a future drop in income. Economic insecurity, hence, increases with unemployment level and should be taken into account in measuring wellbeing (Osberg and Sharpe 2002, 2005). Individual preferences for consumption smoothing lead, for instance, to a decrease in current consumption in the presence of economic insecurity. Consequently, the overall effects of the crisis would be exacerbated if the government does not provide an income stabilisation for those who actually experience unemployment.

3. Empirical methodology

3.1. Counterfactual scenarios derived using EUROMOD

We exploit the potential of the microsimulation techniques to define two different counterfactual scenarios, based on survey data representative of the national population before the onset of the economic downturn, in which we simulate the transition from employment to unemployment as observed between 2008 and 2009.

To enable a cross-country perspective, we use EUROMOD, the EU-wide tax-benefit microsimulation model. EUROMOD simulates tax liabilities (direct tax and social insurance contributions) and benefit entitlements for the household populations of EU Member States in a comparable way across countries on the basis of the tax-benefit rules in place and information available in the underlying datasets. The components of the tax-benefit systems which are not simulated (e.g. old age pensions) are taken from the data, along with information on original incomes. The simulation of the Unemployment Benefits is based on reported earnings, where relevant, and under assumptions about contributions made in the past derived from the limited information available in the data. See Sutherland (2007) for further information.

The underlying micro data come from the 2007 EU Statistics on Income and Living Conditions (EU-SILC)[2] with the exception of the UK component which is based on the national 2008/09 Family Resources Survey. The analysis in this paper is based on the tax-benefit rules in place in 2009 (as of June 30th). Monetary values of non-simulated income components referring to 2006 have been updated to 2009 according to actual changes in prices and incomes over the relevant period.[3] No adjustment is made for changes in population composition between 2007 and 2009.

In the first scenario, representing the short term, we analyze the situation of the new unemployed distinguishing between those entitled and not entitled to receive contributory Unemployment Benefits. In the second scenario, characterising the effects in the long term, we assume that eligibility for contributory Unemployment Benefits is exhausted for all new unemployed. In both scenarios, we compute household disposable income, taking account of the operation of the whole tax-benefit system, allowing individuals and their households to receive additional income-tested benefits (e.g. housing benefits, social assistance, in-work benefits and other means-tested support) and to pay reduced income tax and social contributions given the low level of earnings.

In both scenarios we aim to highlight the amount of insurance coverage guaranteed directly by government, independently of any potential change in the behaviour of family members which could occur in the short or long term. For this reason, we assume zero cross elasticity of labour supply of other family members, and we do not take account of any non take-up of

[2] In case of Belgium, Estonia, and Italy the national version of the EU-SILC has been used because it includes more variables at the necessary level of detail.
[3] This process is documented in EUROMOD Country Reports.

benefits or tax evasion.[4] It is generally assumed that the legal rules are universally respected and that the costs of compliance are zero.

Moreover, household disposable income, after becoming unemployed, is calculated as a monthly average over a 12 months period assuming the person is unemployed for the number of months spent in work in the year before the unemployment shock, rather than taking into account the variation in durations of individual unemployment spells. In this way we can isolate the overall effectiveness of the tax-benefit systems without needing to consider what earnings would be on re-entry into work. Our results can be interpreted as measuring the intended amount of insurance coverage embedded in the tax-benefit systems.

3.2. The characteristics of the new unemployed at the onset of the Great Recession

The analysis focuses on employed and self-employed individuals who lost their job at the onset of the Great Recession. We identify the individuals who are unemployed in the year 2009 but employed in the previous year (thereafter we refer to them as "new unemployed") using the retrospective information included in the EU Labour Force Survey (EU-LFS). The EU-LFS is a continuous household survey conducted on a representative sample of individuals (between 0.2% and 3.3% of the population) aged 15 and over from all countries of the European Union, 3 countries of the European Free Trade Association and 3 Candidate countries. National statistical institutes collect comparable information on current employment status and characteristics, employment history, and individual and household characteristics that Eurostat releases on quarterly and annual basis.[5]

Due to labour market specificities and the channels through which the Great Recession has impacted on each national economy, the risk of unemployment does not affect all workers equally. In order to assess correctly the income stabilisation offered by the welfare systems to the new unemployed it is necessary to identify them precisely, taking into account the most important characteristics associated with the transition into unemployment.

The individuals currently employed in the EUROMOD underlying microdata are those potentially at risk of becoming unemployed. In order match the observations in the EU-LFS data and EUROMOD data, we perform a Coarsened Exact Matching procedure (Iacus et al., 2011) based on individual characteristics (gender, age, education level), previous job characteristics (self employment, sector of activity) and household characteristics (number of adults, presence of children, number of earners, presence of other new unemployed in the same household).[6]

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[4]However, given the incidence of the shadow economy in Italy, gross self-employed income has been calibrated in order to obtain an aggregate amount corresponding to that reported in fiscal data (Fiorio and D'Amuri, 2006).

[5]For more information refer to the EU-LFS webpage
http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/lfs

[6] The basic idea of the Coarsened Exact Matching is to i) coarsen each observed characteristic into meaningful groups, ii) apply exact matching to the coarsened data which involves sorting the observations into strata and then iii) retain the original value of the observed characteristic. Such a matching method resembles the exact matching without restricting the match only to units with exactly the same observed values. The Coarsened Exact Matching procedure weights the matched observations of the control group in the EUROMOD input data according to the size of their strata and the survey weights from the EU-LFS data. In order to narrow the matching to the treated observations (in EU-LFS data) for which control units (in EUROMOD data) have been properly identified, we discard strata with only treated units. Given the choice of the characteristics on which the matching is based, their number is small, ranging across countries between 1% and 7% of the original observations, at the cost of higher overall imbalance.

The use of the Coarsened Exact Matching guarantees the same multivariate empirical distribution of the individual characteristics observed in the EU LFS and matched in the EUROMOD input data, which is essential for the subsequent analysis of the resilience of the welfare state given that eligibility for Unemployment Benefits depends on most of these characteristics (e.g. age, self employment status, and household characteristics) jointly considered.[7]

We apply the Coarsened Exact Matching procedure in a sequential way. In the first step, we only consider one new unemployed individual per household and we match the observations in the treated and control data. In the second step, we match the second unemployed individual per household (if there is one) on the sub-sample of households in the control data which contains one unit already matched in the first step. Such a procedure allows us to identify the same proportion of households with more than one new unemployed member in the final EUROMOD dataset as observed in the EU-LFS data.

The marginal distributions of the characteristics of the new unemployed identified in EUROMOD data as a result of the statistical matching procedure are reported in Table 1. A t-test for equality of means in the control and in the treated group is carried out and it fails to reject the null hypothesis for most of the observed characteristics included in the matching.

The new unemployed are predominantly male (in particular in the UK where 68% of the new unemployed are men). On the one hand, in Belgium, Spain, the Netherland, and the UK they are younger than in other countries; on the other hand in Belgium, Spain and Italy those closer to the retirement age are less affected by unemployment. Among the new unemployed, the majority has a low level of education in Spain and the UK, while more than one quarter has received tertiary education in Belgium, Estonia and the Netherlands. Across countries, the large majority of new unemployed are employees (with a notable share of self-employed in Italy) and working in the service sector (with the exception of Estonia).

The remainder of Table 1 reports some household characteristics of the new unemployed: most of them come from non-single households (in particular in Estonia, Spain and Italy) and about 40% of them have at least one child in their household. The new unemployed come from households where there are two or more earners in 70% of the cases in Estonia and Spain, 60% in Italy, the Netherlands and the UK and only 50% in Belgium. Moreover approximately 15% of the new unemployed in Estonia and Spain come from households with more than one such person, with lower shares in the other countries.

<TABLE 1 AROUND HERE>

Table 2 reports additional income information on the new unemployed derived from EUROMOD data given that such information is not available in the EU-LFS database. The distribution of the new unemployed by household income quintile groups (assessed before the unemployment) shows an inverted U-shape in Belgium, Estonia, Spain and Italy while in the Netherlands and the UK the new unemployed come predominantly from the middle and the upper part of the income distribution.

<TABLE 2 AROUND HERE>

[7] Iacus et al. (2011) proposed a comprehensive measure of global imbalance (L_1) which must be used as a point of comparison between the matching solution and the baseline unmatched data, showing that a good matching reduces the overall L_1. In our case, the statistic L_1 reduces by around 7% in BE, IT, NL, and the UK, 10% in ES and 19% in EE which is satisfactory given the quite restrictive choice of characteristics on which the matching is based and the relatively small numbers of treated observation discarded.

3.3. Income stabilisation indicators

Our analysis of the automatic income stabilisation effect across European countries focuses on both relative and absolute resilience provided by the welfare state, taking into account the interactions of the tax-benefit policies with other existing household income and household composition.

First, in order to assess the level of stabilisation of incomes relative to the pre-shock baseline, we employ the Net Replacement Rate (Immervoll and O'Donoghue, 2004) which is the ratio between household disposable income after and before the unemployment shock. It gives an indication of the extent of the remaining disposable income for those affected by the unemployment shock:

$$\text{Net Replacement Rate} = \frac{Y_{post}}{Y_{pre}}$$

where Y is Household Disposable income made up of Original Income plus Benefits, minus Taxes.

In addition to any form of market income, Original Income includes other sources of personal income as well, such as private inter-household transfers and alimonies. Even in the scenarios where we simulate the unemployment shock, household original income may be positive due to income from savings, private pensions, inter-household transfers or the earnings of other household members. Income from savings could be seen as another channel of self-insurance but given the poor quality of the underlying data we treat them as one of the components of Original Income without highlighting their specific role.

In order to analyse the channels through which relative resilience is transmitted, we decompose the Net Replacement Rate by income source:

$$\text{Net Replacement Rate} = \frac{O_{post} + B_{post} - T_{post}}{Y_{pre}}$$

where O is the Original Income, B is the sum of Benefits and T includes Income Taxes and Social Insurance Contributions paid by employees and the self employed.

Benefits are made of *i)* Unemployment Benefits (both Insurance and Assistance schemes), *ii)* Social Assistance Benefits (including minimum income schemes, housing benefits and residual social assistance benefits), iii) Family Benefits (including allowances due to the presence of children in the household and different types of means-tested benefits such as the Working Tax Credit in the UK) and *iv)* Pension & Disability Benefits, including contributory old-age and survivors pensions, early retirement benefits, disability and invalidity benefits.

Moreover, in order to measure the extent of protection offered by public support, we introduce a new indicator, namely the Compensation Rate which measures the proportion of net earnings lost due to unemployment, compensated by public transfers net of taxes:

$$\text{Compensation Rate} = \frac{\left(B_{post} - B_{pre}\right) - \left(T_{(\bar{E}_{post})} - T_{(\bar{E}_{pre})}\right)}{\left(E_{pre} - T_{(E_{pre})}\right) - \left(E_{post} - T_{(E_{post})}\right)}$$

where the difference in the net earnings before and after the shock represents the income lost due to the unemployment, which is compensated by more generous net benefits. To derive net measures, taxes are allocated proportionally to each income source.[8]

This new indicator allows us to isolate the net public support from the effect of other earnings present in the household of a new unemployed individual, which usually play an important role in determining the income after the unemployment shock. The compensation rate gives us a direct indication of the net public contribution as proportion of the net market income lost due to the unemployment shock. Furthermore, we decompose the compensation rate in the same way as the Net Replacement Rate to highlight the contribution of each group of benefits.

In order to test whether the income stabilisation offered by the tax-benefit systems prevents the new unemployed from falling below an absolute income threshold, we compare the equivalised disposable income before and after the unemployment shock to the poverty threshold at 60% of the median in the pre-shock baseline. In this way we distinguish the new unemployed who are poor already before the unemployment shock ("Poor in work"), those falling below the threshold as a result of the shock ("At risk") and those remaining above it in spite of the shock ("Protected").

Our approach is equivalent to calculating absolute poverty rates with a fixed poverty line and resembles the suggested practice in the measurement of poverty during a recession of using a threshold fixed in real terms (Jenkins et al., 2013). Such an indicator can be considered as an appropriate proxy for the experience of impoverishment that a newly unemployed person faces, comparing his/her current condition with his/her own status before the unemployment shock (Matsaganis and Leventi, 2011).

A discussion of the issues related to effects of Unemployment Benefits and their generosity on employment and a normative judgment of the proper level of protection provided by the welfare systems is beyond the scope of this paper. In the labour economics literature, there is a lot of evidence about the disincentive effects of Unemployment Benefits with high replacement rates (Atkinson and Micklewright, 1991) but also about the positive effects of Unemployment Benefits on subsequent employment stability (Tatsiramos, 2009). Furthermore, the trade off between the adequacy and the disincentive effect of Unemployment Benefits needs to be evaluated considering the minimum levels of living standards guaranteed by the welfare system as a whole (Boadway and Keen, 2000). Nevertheless, in an economically efficient system low firing costs, flexible contracts, and training opportunities are coupled with generous unemployment subsidies (Alesina and Giavazzi, 2006). Given the policy goal of reducing the numbers of individuals at risk of poverty, it is implicit that household income of the new unemployed should not fall below the poverty threshold. Although we do not provide a normative judgement on the level of protection, our indicators allow us to disentangle the consequences of the Great Recession faced by those who are suffering from unemployment and are potentially among the individuals most vulnerable to the effects of the recession.

[8] stands for taxes on income other than earnings. Original incomes other than earnings do not change before and after the unemployment shock and the difference is, hence, zero. This is the reason why they are not included in the formula.

4. Unemployment protection schemes around Europe

The existence in all European countries of a developed welfare state (Schubert et al., 2009), that is intended, among other things, to protect people and their families against economic shocks, is one of the main differences between the crisis faced today and that which occurred in the 1930s. However, the European countries included in our study have welfare systems that differ considerably and as a consequence the degree of protection offered to the unemployed differs (Bertola et al., 2001).

Anglo-Saxon systems, as in the UK, are targeted at low-income individuals and have social assistance schemes with benefit levels that are generous relative to those for similar benefits in other countries, but offer low levels of Unemployment Insurance benefits. Conversely, Scandinavian and Continental systems (Belgium and the Netherlands) have a Bismarkian tradition of contribution-financed Unemployment Benefits, with social assistance schemes that operate as a final safety net. In addition, the more recently developed Southern systems (Italy and Spain) offer generally lower levels of expenditure in social protection and higher reliance on family support. Spain, however, provides high unemployment and regional social assistance benefits resembling Continental countries (Bonoli, 1997). Finally, Eastern European welfare systems differ considerably from one another: Soviet-Union heritage, the later implementation of a liberal ideology together with Scandinavian influences shape the Estonian welfare system, where Unemployment Insurance was introduced only in 2003 (Trumm and Ainsaar, 2009).

Generally, individuals that become unemployed might be eligible for Unemployment Insurance and Unemployment Assistance schemes. In addition, general Social Assistance schemes might be targeted at low-income individuals or households, guaranteeing a minimum level of income.

Unemployment insurance is generally an earnings related benefit (except in the UK where it is a flat rate benefit) based on contribution history. Unemployment assistance complements the unemployment insurance once it is exhausted or gives economic support to the unemployed that do not meet the requirements of the insurance benefit. Whilst every country provides Unemployment insurance, Unemployment assistance is not always available.

A description of the singularities of the unemployment protection schemes and Social Assistance of the countries included in our paper is presented in Table 3. Belgium, Spain and the Netherlands offer the most generous unemployment insurance and for the longest period of time (with an initial replacement rate of 60% with no time limit in Belgium and a replacement rate of 70% in the Netherlands and Spain for a maximum of 24 and 38 months, respectively). Estonia and Italy[9] provide lower replacement rates (between 60% and 40%) with a time limit of 9 and 8 months, respectively. The UK provides the least generous Unemployment Insurance scheme (with a flat payment between € 60 and € 76 per week for a maximum of 6 months). Unemployment insurance schemes are subject to income tax and social contributions (with the exception of Belgium and the UK) paid mostly by the social security agency and only a residual part by the unemployed.

Unemployment assistance is an income-based benefit, means tested in the UK and the Netherlands and provided at a flat rate in Estonia and Spain. Italy and Belgium do not

[9] In Italy, wage supplementation schemes (i.e. *Cassa Integrazione Guadagni*) provide an additional compensation for reduced hours of work. However, people brought onto wage supplementation schemes do not count as unemployed in the official statistics and it is not possible to identify them in our data. In the simulations, we consider only those losing their jobs and not those retaining any wages and reducing hours of work.

provide Unemployment assistance. In the Netherlands, it merely acts as a top up to the Unemployment insurance, providing that the later is lower than the Social Assistance. Eligibility in Estonia and Spain is dependent on contributions while in the UK no contributions are required. It is unlimited in the UK (providing the unemployed person is job seeking) while it has a maximum duration of 18 months in Spain and 9 (or 14 if close to retirement) in Estonia.

While Unemployment insurance and Unemployment assistance are targeted at the unemployed, Social Assistance benefits in principle provide a guaranteed minimum level of income which is independent of employment status (although able bodied working age people are usually expected to be available for work). Every country except Italy offers means-tested time-unlimited payments and the amount of the benefit varies considerably between countries. Social Assistance schemes can act as efficient social shock absorbers so long as the minimum income guarantee is sufficiently generous. However, a significant number of individuals are ineligible for Social Assistance and, anyway, a large fraction of those entitled to it remain at very low levels of income even including Social Assistance (Figari et al., 2013).

<TABLE 3 AROUND HERE>

The disparities in the unemployment protection systems are also reflected in the different coverage rate of the Unemployment Benefits, measured as the proportion of new unemployed entitled to receive Unemployment Benefits. Unfortunately, information on the number of new benefit recipients is rarely available and not comparable across countries, and further difficulties in obtaining yearly estimates arise from the duration of both entitlements to benefits and unemployment spells.[10] The only information available in a cross country perspective is provided by the OECD (2011b) which reports the change in benefit recipients as a percentage of the change in unemployed individuals between the first year after and the year prior the onset of the crisis.[11] Belgium, Estonia, the Netherlands and the United Kingdom show a considerably high proportion of new unemployed receiving Unemployment Benefits (73%, 76%, 87% and 84%, respectively) while the proportion of new unemployed receiving Unemployment Benefits is around 52% in Spain and 42% in Italy.[12] These figures highlight the importance of considering the different level of welfare resilience faced by those entitled and not entitled to Unemployment Benefits, revealing that the lack of coverage is a gap in the protection system notwithstanding the average degree of protection offered to those entitled to Unemployment Benefits.

[10] The EU-LFS collects information on unemployment office registration but not necessarily on benefit recipients.

[11] The onset of the crises varies from one country to another. The main drawback of this measure is that it might not accurately represent the proportion of new unemployed entitled to receive Unemployment Benefits. On the one hand, the reported change in benefit recipients is lower than the actual number of new benefit recipients if those who became unemployed before the onset of the crisis exhausted their entitlement to unemployment benefits. On the other hand, the reported change in the number of unemployed is lower than the actual number of new unemployed if those unemployed before the onset of the crisis found a job (OECD, 2011b).

[12] For comparability reasons and to avoid disparities due to differences in the period covered, Estonian figures are from the EUROMOD Country Report: Estonia 2006-2009.

5. Empirical evidence

5.1. Relative resilience

The average Net Replacement Rates, shown in Table 4, are illustrative of the cross country variation in the relative resilience due to differences in tax-benefit systems, characteristics of the new unemployed and household composition.

In the short term, the household income of those entitled to Unemployment Benefits on average falls to as much as 81% of its pre-unemployment level in Belgium and the corresponding figures are also relatively high in Spain (77%) and the Netherlands (72%). The average Net Replacement Rate is lower, around 65%, in Estonia and Italy, while in the UK it is just 57%.

<TABLE 4 AROUND HERE>

However, these averages can obscure differences in the distribution of Net Replacement Rates which reveal the extent of variation in income replacement across the countries considered. The kernel density functions presented in Figure 1 illustrate these differences. Countries with higher Net Replacement Rates (Belgium, Spain and the Netherlands) show higher concentrations of new unemployed around the mode, in part due to the minimum payments and upper ceilings of the earnings related Unemployment Benefits. The minimum payments result in Net Replacement Rates which do not fall below a lower limit (around 30-40%) but also being larger than 100% in some cases (in particular in Belgium). The dispersion of the Net Replacement Rates is much larger in Estonia, Italy and in particular in the UK, with substantial shares of new unemployed facing a very low Net Replacement Rate. The clear bimodal pattern observed in Estonia, Spain and Italy is due to the concentration of new unemployed around those modal values depending on whether they live in sole earner households or not.

<FIGURE 1 AROUND HERE>

In Estonia, Spain, Netherlands and the UK those not entitled to Unemployment Benefits on average have a higher Net Replacement Rate than those entitled to the benefits (Table 4). There are two explanations for a higher relative resilience in spite of the lack of receipt of Unemployment Benefits. First, there is a compositional effect. Those not entitled to the benefits are less attached to the labour market (being mainly youths and women in couples with a greater likelihood of short contribution histories) and hence contribute less to the household income before the unemployment shock. This is confirmed by the greater importance of original incomes and pensions as a proportion of pre-shock disposable income (Figure 3). Secondly there is, a compensation effect due to other benefits (as shown by the greater relevance of Social Assistance and Family Benefits in Figure 3) received by those not entitled to Unemployment Benefits which compensate at least in part for the loss of earnings. As expected, this compensation effect is not apparent in Italy due to the lack of income based safety nets and only partially in Belgium due to the relatively generous level and duration of Unemployment Benefits.

As expected, in the long term when the entitlement to Unemployment Benefits is exhausted for all new unemployed, household income falls much more consistently within a range between 40% (Italy) and 57% (UK) of its pre-unemployment level. Interestingly, in this scenario the country with the highest Net Replacement Rate is the UK with an average value equal to that for those entitled to Unemployment Benefits in the short term. The UK Net Replacement Rate is also highest in the long term for the sub-group of new unemployed who live in households with no other people with earnings ("Sole earner households" in Table 4). These are the likely to be among the new unemployed to experience large reductions in

income and low incomes in the long term. In all countries considered the Net Replacement Rate is lower for this sub-group than for the new unemployed as a whole, strikingly so for Italy.

In the long term, the Net Replacement Rates show higher dispersion in the countries where a substantial share of the new unemployed are left with very low or null incomes. The kernel density functions presented in Figure 2 show that this is particularly true in Italy due to the absence of Social Assistance Benefits and in the Netherlands where homeowners are generally not entitled to the Social Assistance.

< FIGURE 2 AROUND HERE>

The protective role played by Original Income (including earnings of other household members) is illustrated in Figure 3 which shows the Net Replacement Rates by its components (with Taxes and Contributions reducing the Replacement Rates and hence appearing with the negative sign). Income from other non-work related Benefits (i.e. mainly pensions and disability benefits) received plays a similar but smaller role. In the short term, the sum of these two components for those entitled to Unemployment Benefits, before the deduction of taxes and contributions, makes up around 70% of post-shock household income in Italy and the UK, 60% in Estonia and the Netherlands, 53% in Spain and around 44% in Belgium (figures given by the ratio between each component of the bars in Figure 3 and the Net Replacement Rate.) These figures are even larger for those not entitled to Unemployment Benefits and considering the situation of all new unemployed in the long term. From Figure 3, it is clear that a substantial part of the cushioning effect on household income is attributable to the market incomes of other household members (white bar) and to public transfers (i.e. mainly pensions, grey bar, in all countries but the UK) which are not primarily designed as automatic stabilisers or as protective safety nets in case of an unemployment shock. Moreover, given that earnings of other household members are progressively more important as household income increases, the average Net Replacement Rates are likely to be pushed up by the presence of these incomes at the top of the income distribution and this is only partly compensated by progressive income tax.

When we consider those entitled to Unemployment Benefits, it emerges that these play a large role in Belgium (63% of post-unemployment household income), the Netherlands (67%) and Spain (55%). In Italy and Estonia they make up around 40% of post-unemployment household income. In the UK the contributory Unemployment Benefit contributes to only 11% of the post-unemployment income while Social Assistance makes up 24% of it.

In each of the scenarios Family Benefits play an important role in those countries where they are relatively generous and, at least partly, income based and hence responsive to the income shock due to the loss of a job in the household: in Belgium, Estonia, Netherlands and, above all the UK. In the latter case the Working Tax Credit (included in “Family Benefits”) has an important cushioning effect on household income when only one earner is left in the family who is then entitled to the Credit.

Across countries, with the only exception of Italy where there is no general income support scheme, Social Assistance on average is a significant top up to incomes for those not entitled to Unemployment Benefits and for the new unemployed in the long term scenario.

The general lesson of this analysis is that it is necessary to look at the social protection system as a whole and how it interacts with household composition and incomes received by other household members. Focusing exclusively on Unemployment Benefits is not sufficient.

<FIGURE 3 AROUND HERE>

In the short term the average net public contribution to the disposable income as proportion of the net earning lost due to unemployment (Table 5) ranges from 30% in the UK to 74% in Belgium for those entitled to Unemployment Benefits and from 2% in Italy to 26% in the UK for those not entitled. As expected, the average Compensation Rate is usually much lower for those not entitled to Unemployment Benefits than for those entitled, with two extreme situations that are of interest. First, the lowest value is achieved in Italy where the Compensation Rate is close to zero given the absence of general Social Assistance schemes and the only source of income support being channelled through limited family based tax concessions, which are inversely related to the income of the main earner. Secondly, the highest value is observed in the UK where the Compensation Rate for those not entitled to Unemployment Benefits is very similar to that faced by those entitled to Unemployment Benefits. This illustrates how the British contributory Unemployment Benefit does not offer protection that is as generous as in other countries and at the same time, the level of protection offered by the Social Assistance benefits is on average greater than in other countries. Such evidence raises the issue whether the tax-benefit system should guarantee a reasonable minimum level of protection for all potentially unemployed people or alternatively should ensure the relative income maintenance for a smaller (and generally higher income) group.[13]

In the long term, when the new unemployed have exhausted their entitlement to Unemployment Benefits, the average Compensation Rate is usually very similar to that faced by those not entitled to Unemployment Benefits in the short term. The main exceptions are Belgium and Estonia where there are effects due to the composition of the group not entitled to Unemployment Benefits which act in opposite directions. In Estonia, those not entitled to Unemployment Benefits are less attached to the labour market and have low household incomes (confirmed by their high poverty risk when in work as shown in Table 6) and hence are more likely to be entitled to Social Assistance Benefits than the new unemployed as a whole. In Belgium the opposite is true: those not covered by the generous Unemployment Benefit protection system are usually young and temporary workers and the level of their family income (e.g. from the earnings and pensions of their parents) prevents them from being entitled to Social Assistance.

In the long term, the comparison of the Compensation Rate between the new unemployed as a whole and those living in sole earner households reveals that the average net public support is higher for sole earner households in all countries with the exception of Italy, highlighting the extent to which public support is targeted at those without other resources. This seems to be particularly true where the bulk of public support comes from means-tested Social Assistance. This is the case of Belgium and the UK where the net public transfer is 13 percentage points higher for sole earner households than for the new unemployed as a whole.

<TABLE 5 AROUND HERE>

Figure 4 reports the average Compensation Rate by its components showing that in the short term most public support is channelled through Unemployment Benefits (bar with forward sloping grey lines) for those entitled to them. It is important to note that in the Netherlands and, to lesser extent in Spain, the income tax (bar with backward sloping black lines) payable on these benefits reduces their effect in a non-negligible way. In other countries specific tax

[13] It should be noted that the UK system does not *guarantee* the average level of protection shown by our results. These assume complete take-up of means-tested benefits (included in Social Assistance and Family Benefits) and hence show the intended amount of insurance coverage embedded in the existing tax-benefit systems.

credits for replacement income (Belgium) or general tax allowances make the taxes on Unemployment Benefits tiny. In the UK, Social Assistance (black bar) makes up the largest share of public support even when the contributory Unemployment Benefit is payable while in all countries, except Italy, it is a much smaller but important source of compensation for those not entitled to Unemployment Benefits and for the new unemployed in the long term.

<FIGURE 4 AROUND HERE>

The role of Social Assistance and the extent to which public support is targeted at the bottom of the distribution is made explicit by looking at the average Compensation Rate by household income quintile group for those entitled to Unemployment Benefits in the short term (Figure 5). The most striking pattern is observed in the UK: due to Social Assistance (black bar), and the decreasing effect of the contributory Unemployment Benefit (bar with forward sloping grey lines) the Compensation Rate shows a decreasing pattern from a 57% for the new unemployed from the first quintile group to 14% for those at the top of the income distribution. It is also clear that the cushioning role played by Family Benefits (bar with dots), mainly the means-tested Child Tax Credit and the in-work benefit Working Tax Credit). On the one hand, from the second quintile on, increases in these benefits contribute to a higher Compensation Rate (and in particular the presence of someone still working in the household may trigger entitlement to Working Tax Credit). On the other hand, at the very bottom of the distribution, households where the only earner becomes unemployed lose their entitlement to the Working Tax Credit contributing to a lower Compensation Rate.

In the other countries, the average Compensation Rate decreases with income quintile but to a lesser extent than in the UK. Social Assistance emerges as a component of public support for those at the bottom of the income distribution in Belgium, Estonia, Spain, and, above all, the Netherlands. Moreover, the role of income tax paid on Unemployment Benefits in reducing the overall Compensation Rate is not negligible in the Netherlands nor for those at the top of the income distribution in Belgium, Estonia and Spain.

<FIGURE 5 AROUND HERE>

5.2. Absolute resilience

The extent to which the tax-benefit instruments allow the new unemployed to avoid falling below a given level of income depends on the generosity of the system, entitlement to receive Unemployment Benefits, the income position of the new unemployed before becoming unemployed and their household circumstances.

Table 6 shows the proportion of new unemployed individuals with household equivalised incomes below the poverty threshold before unemployment ("Poor in work"), those falling below the threshold as a result of becoming unemployed ("At risk") and those remaining above in spite of unemployment ("Protected"). It shows the situation for all the new unemployed in the short term (by their Unemployment Benefits entitlement status) and in the long term, distinguishing between all households and sole earner households.

Among those entitled to Unemployment Benefits, the share of those at risk of poverty before unemployment ranges from around 2-4% in the Netherlands, the UK, and in Belgium to much higher levels in Spain, Italy and Estonia (around 9-12%). Among the new unemployed entitled to Unemployed Benefits, in the UK 44% are at risk of falling below the poverty threshold on becoming unemployed. The percentages for the other countries are 30% in Italy, 27% in Estonia, 18% in the Netherlands, 17% in Spain and 11% in Belgium.

<TABLE 6 AROUND HERE>

The new unemployed not entitled to the Unemployment Benefits are, on average, from a poorer background: as already mentioned, these individuals are less attached to the labour market, with a shorter contributory history and lower salaries which result in a relatively low household income. They face a poverty risk, when still at work, at least double that for the new unemployed entitled to Unemployment Benefits, with a risk of poverty particularly high in Estonia (36%). When they become unemployed the share of those who remain protected (around 45% in Estonia, and Italy; around 60% in the other countries) is lower than the corresponding share of those entitled to Unemployment Benefits, except in the UK where it is higher. This is explained on the one hand by the fact that, as we have seen Unemployment Benefits make little difference to the average level of protection in the UK. On the other hand, again, the composition of the non-entitled group is such that other household incomes (earnings of partners of women, or parents of young people, with low labour market attachment) have a protective effect.

As expected, the situation is even worse in the long term scenario when Unemployment Benefits are exhausted. Less than half new unemployed are protected from poverty, with larger shares of people at risk of poverty than in the short term in all countries (except in the UK). However, it is when looking at the sole earners that the dramatic share of those inadequately protected by the welfare system becomes clear: in Estonia only 4% of the new unemployed receive enough public support to stay above the poverty threshold, and around 12%-14% in Belgium, Spain and Italy. In the Netherlands and the UK, the Social Assistance schemes allow up to 21% and 26%, respectively, of the new unemployed to stay above the poverty threshold.

Looking at poverty risk faced by the unemployed as a whole in the long term, the share of new unemployed already poor when they were still in work resembles the overall pattern of in-work poverty (Ponthieux, 2010). The main exceptions are Estonia where the new unemployed face a risk of poverty before unemployment higher than the risk faced by the in work population as a whole and the UK where the opposite is true. Overall, it seems that in Europe the poor do not bear a disproportionate share of the losses – at least in terms of unemployment shock at the onset of the Great Recession – as it was the case in the 1990-1 recession in the USA (Cutler and Katz, 1991).

However, the share of the new unemployed not protected from poverty by the welfare systems, in particular when Unemployment Benefits are exhausted, supports Cantillon's view (2011) that social protection for working age individuals in Europe has become less adequate and social redistribution less pro-poor. Social Assistance schemes are not adequate to stop those losing their job from descending into poverty (Figari et al., 2013).

6. Conclusions

We have analysed the extent to which tax-benefit systems provide an automatic stabilisation of income for those who became unemployed at the onset of the Great Recession. The focus of the analysis is on the compensation for earnings lost due to unemployment which is channelled through the welfare systems to this group of people who are clearly vulnerable to the recession's adverse effects. In order to assess the impact of unemployment on household income, counterfactual scenarios are simulated by using EUROMOD, the EU-wide microsimulation model, integrated with information from the EU-LFS data.

The consequences of the economic downturn for the household income of unemployed individuals depend on the interaction between their contribution history, their living arrangements and the capacity of the tax-benefit systems to absorb macro-economic shocks.

The European countries included in our paper have systems of social protection for the unemployed that differ considerably, ranging from generous earnings related benefits to flat rate low level amounts. As a consequence the degree of protection offered to the unemployed differs.

Our analysis reveals the need to look at the social protection system as a whole highlighting the role for adequate minimum income schemes alongside Unemployment Benefits.

In the short term, individuals entitled to Unemployment Benefits face the highest average level of protection in countries characterised by generous and long lasting earnings-related Unemployment Benefits like Belgium, Spain, and the Netherlands. At the other extreme, in the UK the flat rate Unemployment Benefit payable for at most 6 months offers the lowest level of replacement rate. Individuals not entitled to Unemployment Benefits and all unemployed in the long term face a much higher risk of falling below the poverty threshold, in particular in countries with less developed Social Assistance, such as Italy. The evidence presented here suggests that the current crisis will put minimum income schemes in several EU countries to a severe test. To meet the challenge, social safety nets must become stronger and tighter (Figari et al., 2013).

In a cross country perspective, such evidence raises the issue whether the tax-benefit system should ensure a minimum level of living standards for all individuals potentially at risk of unemployment or alternatively should ensure a higher stabilization of income for the sub-group that is more attached to the labour market with a longer contributory history and permanent employment contracts.

Our analysis has demonstrated the importance of the income of other household members in determining the economic resilience of the unemployed in the Great Recession. The sharing of risks within the household can be seen in general terms as a complement to the insurance function of the Welfare State. We have shown that it is those without either source of protection who are most at risk. However, as is usual in distributive analysis, we have assumed complete income pooling within the household. The possibility that incomes are not in fact pooled serves to remind us of the non-equivalence of income received as Unemployment Benefit as an individual entitlement on the one hand, and income from Social Assistance, usually assessed on the economic situation of the family as a whole, on the other.

The household pooling assumption is particularly important when the concern is with the young unemployed who represent almost half of the new unemployed across countries and just slightly less in Estonia and Italy. Depending on their family circumstances, educational attainments and career prospects the young unemployed can be the most vulnerable and deserve particular attention. The extent to which their incomes are cushioned can influence major life decisions such as leaving the parental home (Iacovou, 2010) or sharing housing (Mykyta and Macartney, 2010) and have an impact on future household formation (Painter, 2010). On the one hand, if they live in the parental home their earnings, lost due to unemployment, represent a secondary income source (because of other earnings or pensions received by their parents). In that case the household acts as an effective income stabilizer only if income is shared. On the other hand, if they do not live in the parental home, the generally lower absolute level of their incomes implies greater compensation by means-tested benefits and also a lower share of young new unemployed that are protected from the risk of poverty, making them particularly vulnerable.

Finally, we believe that the stress test approach applied to tax-benefit schemes in a cross country perspective offers some potential opportunities for further research. In particular it could contribute to the growing literature on the measurement of the economic aspects of

well-being (Stiglitz et al., 2009). The approach presented in this paper could be applied to calculate the "risk of unemployment" component of the Economic Security domain of the Index of Economic Well-Being (Osberg and Sharpe, 2005). The stress test approach based on EUROMOD would allow one to derive the component of the index considering the heterogeneity of individual situations in a large number of countries, by capturing and weighting appropriately the individual risk of a job loss, the personal entitlement to Unemployment Benefits and the household level of replacement income that could be expected from the welfare system (Osberg and Sharpe, 2009).

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Tables

Table 1. Characteristics of the new unemployed

	Belgium	Estonia	Spain	Italy	Netherlands	UK
Sample size (unweighted)	2,647	2,410	7,260	8,182	6,172	11,934
Sample size (weighted)	110,194	49,389	1,670,376	469,277	143,851	1,050,124
Individual characteristics						
Male %	0.60	0.64	0.65	0.62	0.62	0.68
Age groups %						
< 35	0.49	0.38	0.46	0.41	0.47	0.47
35-44	0.29	0.27**	0.32	0.35	0.25	0.25
45-54	0.17	0.25	0.17	0.19	0.16	0.16
55+	0.05	0.10	0.06	0.05	0.12	0.12
Education level %						
Lower secondary	0.33	0.13**	0.57	0.45	0.37	0.60
Upper secondary	0.41	0.60	0.23	0.44	0.36	0.19
Tertiary	0.25	0.27	0.20*	0.11	0.27	0.21
Previous job						
Self-employed %	0.04**	0.02***	0.05	0.13	0.03	0.09
Sector of activity %						
Agriculture	0.00***	0.02***	0.04*	0.02**	0.01**	0.01
Industry	0.22	0.36	0.16	0.27	0.13	0.47
Construction	0.12	0.22	0.30**	0.17	0.05**	
Services	0.66	0.40	0.51**	0.55	0.81**	0.52
Household characteristics						
Number of adults %						
1	0.33	0.17***	0.07**	0.15	0.30	0.24
2+	0.67	0.83***	0.93**	0.85	0.70	0.76
Presence of children %	0.42	0.47	0.49	0.41	0.40	0.43
Number of earners %						
1	0.50	0.33*	0.30	0.40	0.42	0.40
2+	0.50	0.67*	0.70	0.60	0.58	0.60
With other new unemployed in the household %	0.05	0.14	0.16	0.05	0.02	0.07

Notes: Summary statistics for the new unemployed identified in EUROMOD data, by means of Coarsened Exact Matching. New unemployed are individuals who became unemployed between 2008 and 2009. * indicates mean value of the observed characteristics in EUROMOD data statistically different from the mean value in EU-LFS data at 10% level; ** 5%, *** 1%. Source: EUROMOD version F4.23.

Table 2. New unemployed by household income quintile group

	Belgium	Estonia	Spain	Italy	Netherlands	UK
Bottom	15.02	15.30	12.63	12.98	8.62	9.34
2nd	19.02	15.87	19.98	17.37	16.46	17.40
3rd	23.49	22.70	23.99	22.07	23.35	22.58
4th	21.78	26.03	23.49	25.26	26.27	24.64
Top	20.69	20.10	19.90	22.32	25.30	26.04

Notes: Summary statistics for the new unemployed identified in EUROMOD data. Quintile groups based on household equivalised disposable income in the baseline (before the unemployment shock). Source: EUROMOD version F4.23.

Table 3. Unemployment Benefits (UBs) and Social Assistance schemes at June 30th, 2009

	Schemes	Typology / name	Contributions conditions	Payment rate	Duration (months)	Subject to Tax and SICs?
BE	*UB Insurance*	Earnings-related benefit (flat rate for youths); amount depends on family situation	Between 45 weeks in 18 months and 89 weeks in 3 years	Single persons: 60% (from 2nd year 53%). Cohabitants without dependants: 58% (from 2nd year 40%) Lower and upper ceilings	Unlimited	Tax
	Social Assistance	*Minimex*		Based on means test	Unlimited	
EE	*UB Insurance*	Earnings-related benefit	12 months in 3 years	50% for 1st 100 days; afterwards 40%. Lower and upper ceilings	9	Tax and Credited SICs
	UB Assistance	Flat rate (formally income-based)	6 months in 1 year	€ 64 per month	9 (+ 5 until retirement)	
	Social Assistance	*Toimetulekutoetus*		Based on means test	Unlimited	
ES	*UB Insurance*	Earnings-related benefit; amount depends on family situation	12 months in 6 years	70% for 1st 6 months; afterwards 60%. Lower and upper ceilings	4 -24	Tax, SICs and Credited SICs
	UB Assistance	Flat-rate benefit (*Subsidio por desempleo)*, income-based	3 months (1+ dependants) or 6 months (No dependants)	From 80% of the "Public Income Rate of Multiple Effects" (No dependants) to 133% (3+ dependants)	6 - 18	Tax
	Social Assistance	*Ingreso mínimo de inserción*		Based on means test	6 - unlimited	
IT	*UB Insurance*	Earnings-related benefit*	52 weeks in 2 years	60% (for 1st 6 months, 50% for month 7 and 8 and 40% for the rest) Upper ceiling	8 (12 if aged 50+)	Tax and Credited SICs
NL	*UB Insurance*	Earnings-related benefits (*General* and *Extended* benefits)	*General:* 26 weeks in last 36 weeks. *Extended*: 26 weeks in last 36 weeks and at least 52 days in 4 of last 5 years	*General*: 70%. Lower and upper ceilings *Extended*: 70% (75% for 1st 2 months) Upper ceiling	*Gen.*: 3 *Ext*.: 6-38	Tax and SICs
	UB Assistance	*Toeslagenwet*, income-based		Based on means test	Same as UB insurance	Tax and SICs
	Social Assistance	*Bijstand*		Based on means test	Unlimited	Tax and SICs
UK	*UB Insurance*	Flat rate benefit (*Contributory Jobseekers' Allowance - JSA*)	1 of last 2 years, with minimum level	From € 60 to € 76 per week	6	Tax
	UB Assistance	*Jobseekers' Allowance (JSA)*		Based on means test	Unlimited	
	Social Assistance	*Income support*		Based on means test	Unlimited	

Notes: SICs: Social Insurance contributions paid by the unemployed. Credited contributions are paid by the social security agency on the Unemployment Benefit. * Special schemes in the Construction sector and the wage supplementation schemes (*CIGs*) are not simulated in EUROMOD. Source: MISSOC (2009) and EUROMOD country reports

Table 4. Average Net Replacement Rates in the short and long term, by Unemployment Benefits (UBs) entitlement status

		Belgium	Estonia	Spain	Italy	Netherlands	UK
Short term	Entitled to UBs	0.81	0.64	0.77	0.65	0.72	0.57
	Not entitled to UBs	0.78	0.84	0.81	0.47	0.78	0.64
Long term	All new unemployed	0.56	0.50	0.51	0.40	0.48	0.57
	Sole earner households	0.48	0.39	0.45	0.16	0.32	0.52

Notes: Net Replacement Rate is the ratio of household disposable income after and before the unemployment shock. Source: EUROMOD version F4.23.

Table 5. Average Compensation Rates in the short and long term, by Unemployment Benefits (UBs) entitlement status

		Belgium	Estonia	Spain	Italy	Netherlands	UK
Short term	Entitled to UBs	0.74	0.40	0.62	0.45	0.62	0.30
	Not entitled to UBs	0.11	0.20	0.10	0.02	0.22	0.26
Long term	All new unemployed	0.22	0.10	0.13	0.01	0.20	0.26
	Sole earner households	0.35	0.23	0.25	0.00	0.26	0.39

Notes: Compensation Rate is the proportion of household disposable income lost due to unemployment that is compensated by public transfers. Source: EUROMOD version F4.23.

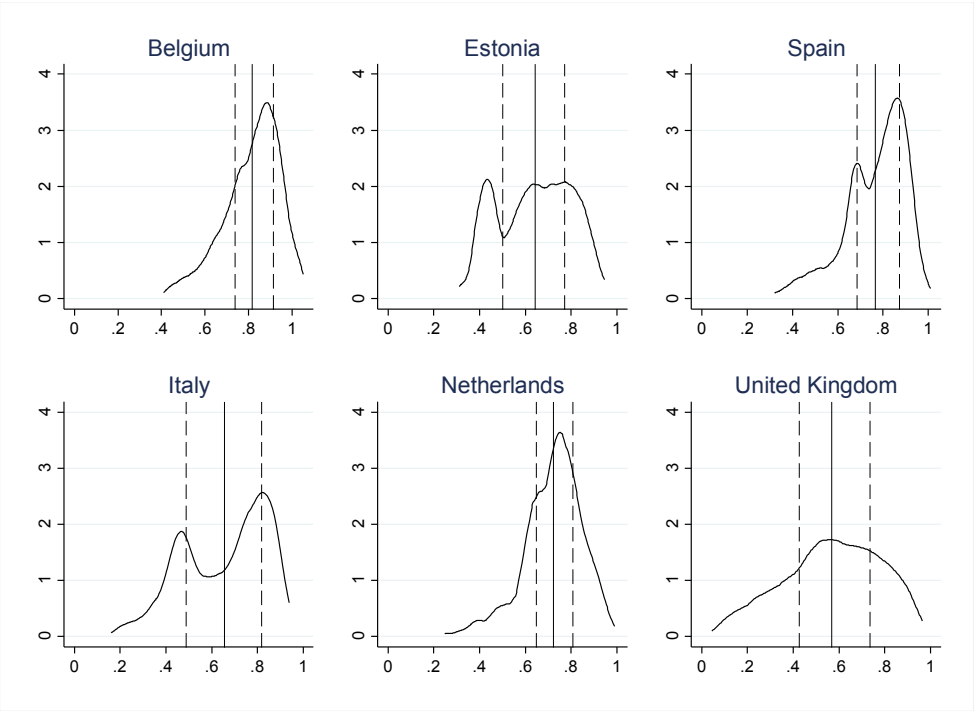
Table 6. Poverty status of the new unemployed in the short and long term, by Unemployment Benefits (UBs) entitlement status

		Belgium	Estonia	Spain	Italy	Netherlands	UK
Short term							
Entitled to UB	Poor in work	0.04	0.12	0.09	0.10	0.02	0.03
	At risk	0.11	0.27	0.17	0.30	0.18	0.44
	Protected	0.85	0.61	0.74	0.61	0.80	0.52
Not Entitled	Poor in work	0.15	0.36	0.21	0.19	0.13	0.08
	At risk	0.22	0.19	0.16	0.36	0.22	0.34
	Protected	0.63	0.45	0.62	0.46	0.65	0.58
Long term							
All households	Poor in work	0.05	0.13	0.10	0.11	0.03	0.04
	At risk	0.51	0.53	0.51	0.45	0.50	0.46
	Protected	0.44	0.34	0.39	0.44	0.46	0.50
Sole earner households	Poor in work	0.09	0.28	0.22	0.22	0.05	0.09
	At risk	0.78	0.69	0.66	0.65	0.74	0.66
	Protected	0.13	0.04	0.13	0.12	0.21	0.26

Notes: The poverty threshold is fixed at 60% of baseline median household disposable equivalised income. Source: EUROMOD version F4.23.

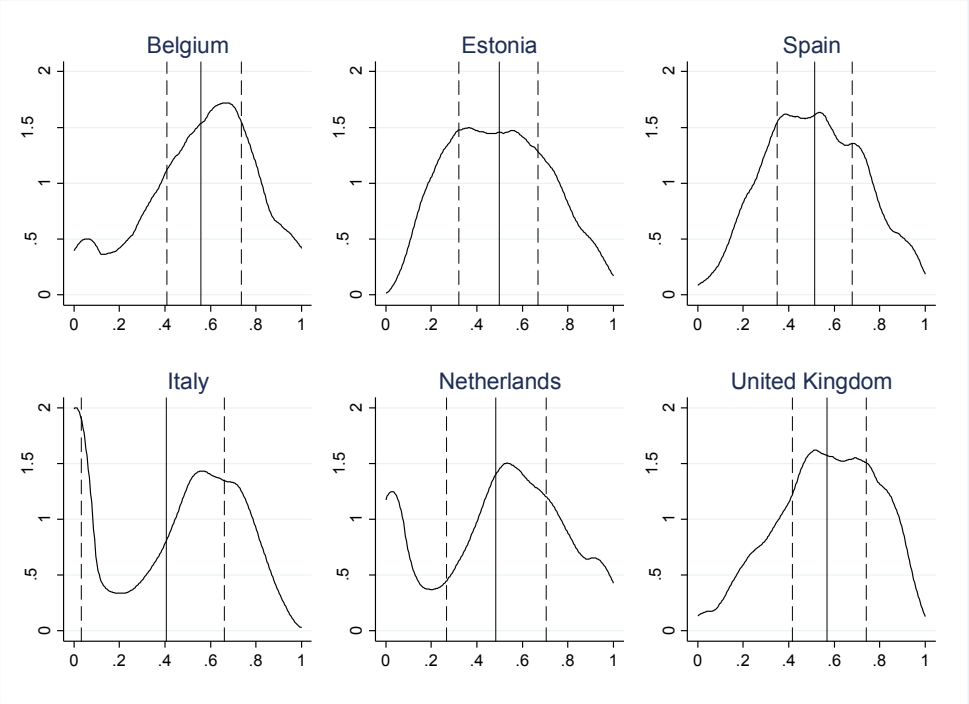
Figures

Figure 1. Distribution of Net Replacement Rates in the short term, new unemployed entitled to Unemployment Benefits



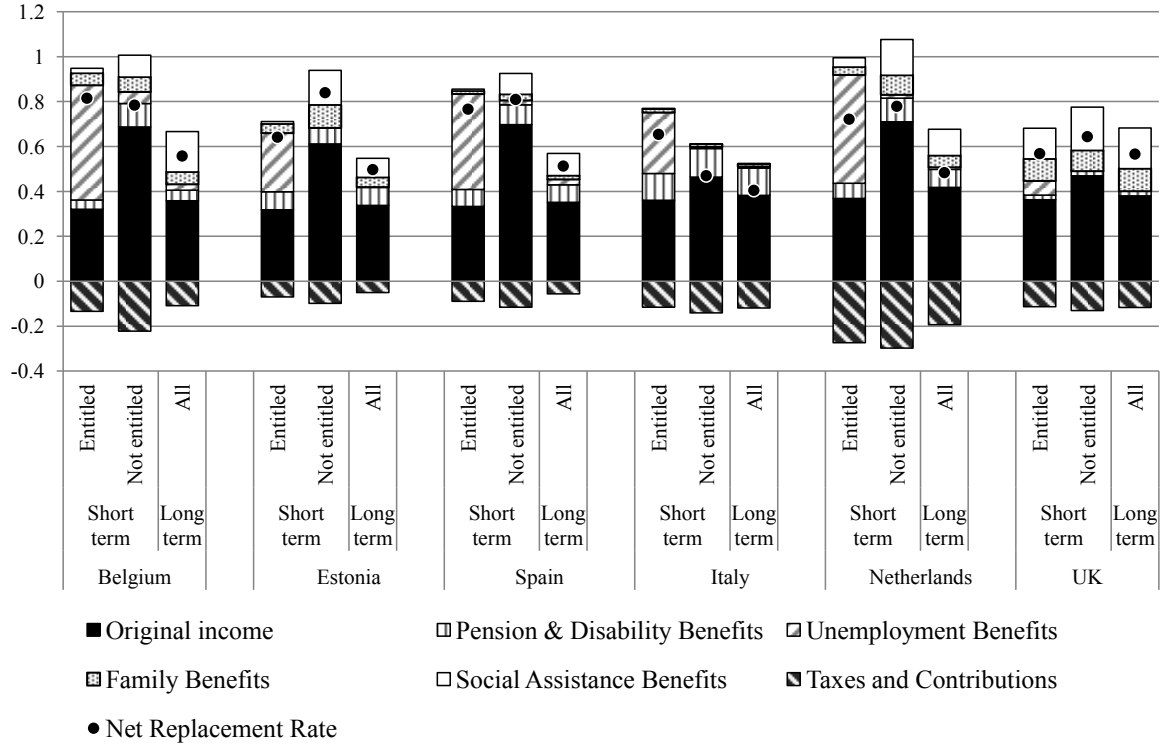
Notes: The continuous vertical line is the Average Net Replacement Rate. The dashed vertical lines represent respectively the 25th and 75th percentile of the Net Replacement Rate distribution. See Table 4. Source: EUROMOD version F4.23.

Figure 2. Distribution of Net Replacement Rates in the long term, all new unemployed



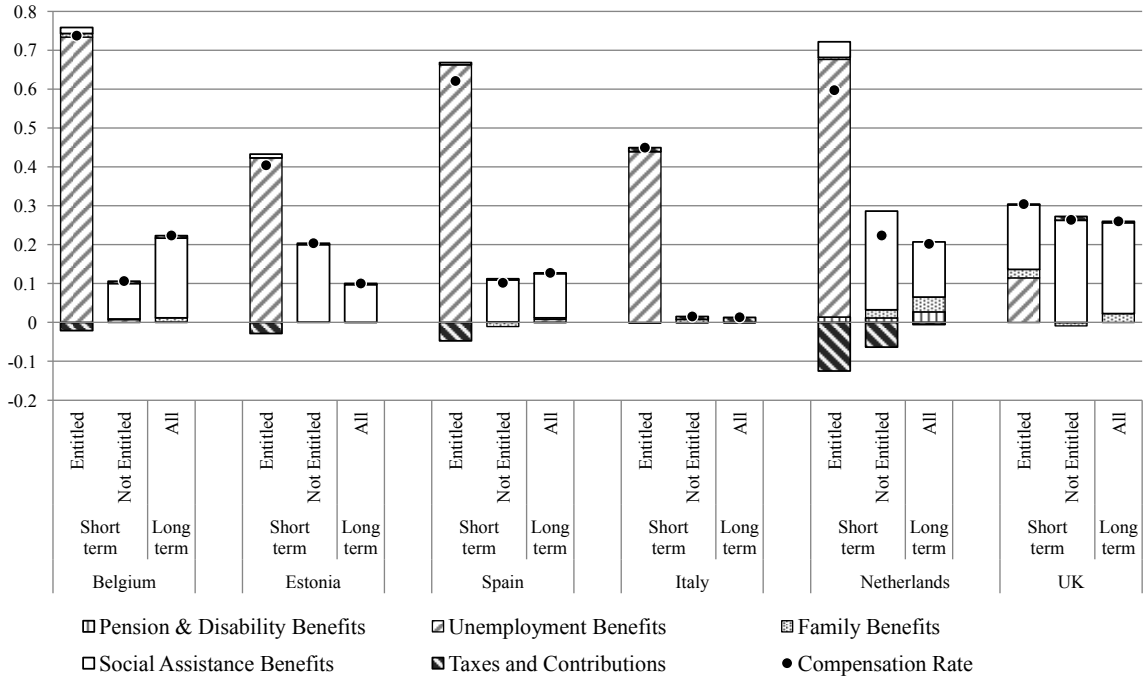
Notes: See Figure 1. Source: EUROMOD version F4.23.

Figure 3. Decomposition (by income source) of average Net Replacement Rates in the short and long term, by Unemployment Benefits entitlement status.



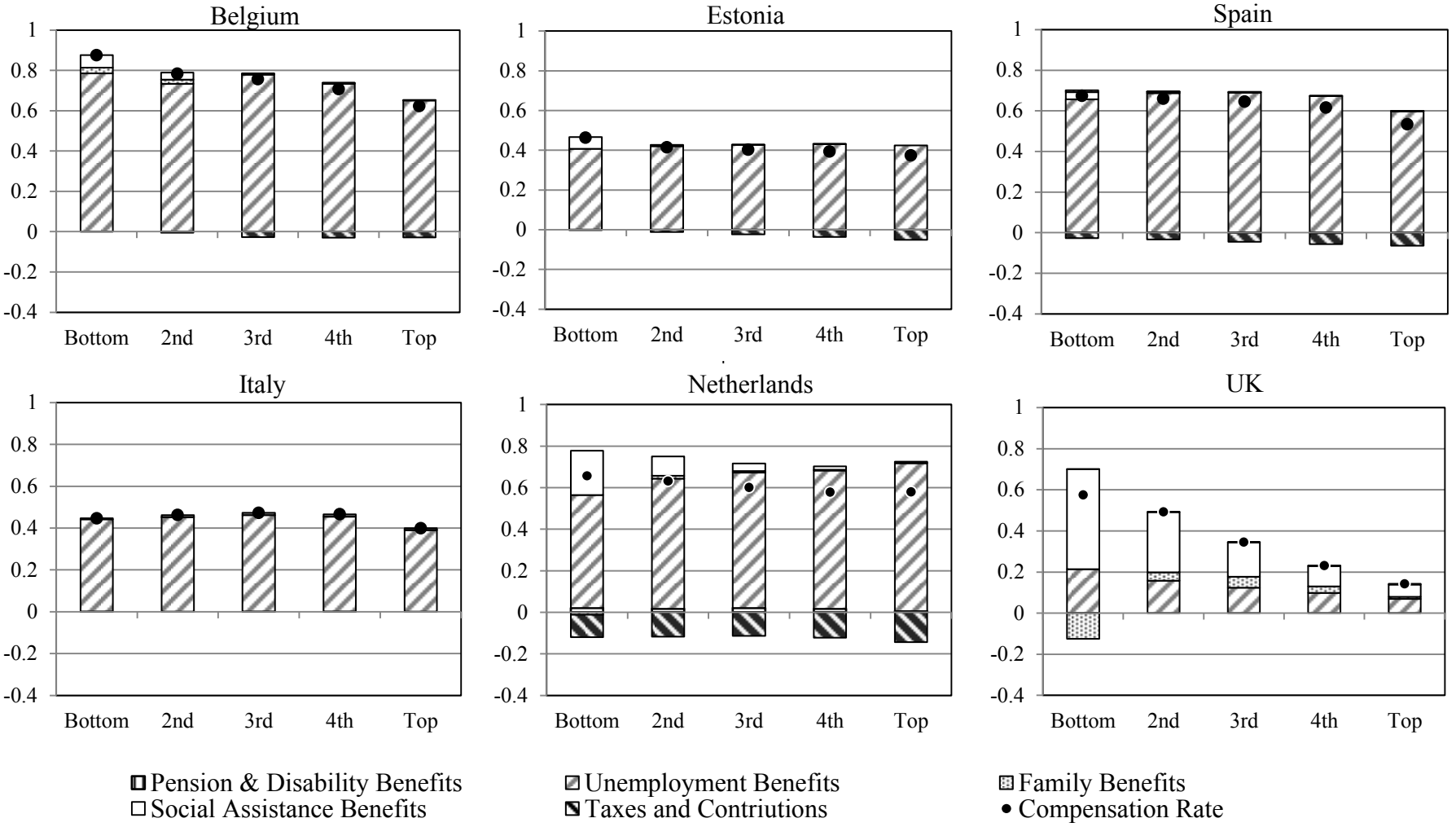
Notes: Net Replacement Rate is the ratio of household disposable income after and before the unemployment shock. "Taxes and Contributions" include personal income tax, employee social insurance contributions and other direct taxes such as the UK Council Tax and Property Tax in Italy; "Social Assistance Benefits" includes minimum income payments, housing benefits and other residual Social Assistance benefits; "Family Benefits" include allowances related to the presence of children, other means-tested benefits and refundable Tax Credits as in Spain, and the UK. Where income from Unemployment Benefits is shown for the "Not entitled" group this is due to other household members receiving these benefits. Source: EUROMOD version F4.23.

Figure 4. Decomposition (by income source) of average Compensation Rates in the short and long term, by Unemployment Benefits entitlement status



Notes: Compensation Rate is the proportion of net household market income lost due to unemployment that is compensated by public transfers. See Figure 3. Source: EUROMOD version F4.23.

Figure 5. Decomposition (by income sources) of average Compensation Rates for those entitled to Unemployment Benefits by household income quintile groups



Notes: See Figure 2. Quintile groups based on disposable income before becoming unemployed. Source: EUROMOD version F4.23.